

The Files - Contract 082-5483-9

26 March 1959

Trip Report - Variable Speed Tape Recorder/Reproducer, BT-7

1. On 19 March 1959 a visit was made to the [REDACTED] Tulsa, Oklahoma. The purpose of this visit was to monitor progress on the Variable Speed Tape Recorder/Reproducer, BT-7, that is being modified under the subject contract. The following persons participated in the meeting:

OC-E/SEB-ES
- OC-E/R&D-EP

2. In order to familiarize Agency personnel with what [REDACTED] had done to date on the equipment under modification, [REDACTED] suggested that we inspect the laboratory area where the BT-7 was under fabrication. [REDACTED] is using their [REDACTED] as a basic unit. This unit has standard tape speeds of 7.5 and 15 ips. The [REDACTED] will be modified to permit recording of a signal at 30 ips and variable speed playback between 1.8 and 3.5 ips. The equipment will be packaged for rack mounting and will consist of three units: (1) the tape deck unit, (2) the standard [REDACTED] amplifier unit, and (3) the electronic part of the servo speed control, a power supply and a 5-watt monitor amplifier with speaker.

3. At the present time, [REDACTED] is modifying the tape deck unit so that two capstans may be used. The first capstan, which will be engaged during record operation, will pull the tape at 30 ips. The second capstan, which will be engaged during playback operation, will pull tape at 1.8 to 3.5 ips.

4. The speed control will be adapted from an instrument which was designed to operate at constant speeds over a wide range of input frequencies and voltage variation. In this unit, a small tachometer is coupled to a capstan drive motor. The output of the tachometer was rectified and compared to a DC reference voltage. The algebraic sum of these voltages is amplified and used to control the power which is fed to the capstan motor. Although the intent of the original design was to provide constant speed under varying input voltages, it was found that stable operation over a wide range of continuously variable speeds could be obtained by varying the DC voltage. This is in effect what [REDACTED] is doing in the BT-7 equipment.

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5. During the course of reviewing the equipment specifications with [REDACTED] the fact that the equipment was to operate at 110 volts AC, 50/60 cycles was pointed out. Apparently, [REDACTED] was not aware of this fact. Messrs. [REDACTED] pointed out to [REDACTED] that this was a definite requirement for the equipment. In fact, [REDACTED] could envision several specific instances where operation at 50 cycles is required. [REDACTED] indicated that since he was not aware of the 50 cycles specification, he had not designed the equipment to operate as such. However, after reviewing the problems involved and the factors required to meet this specification, he indicated that it could probably be solved by providing replaceable capacitors.

6. [REDACTED] indicated that the controls for the equipment shall be kept to a minimum. Representative controls will be rewind, stop, forward, high-speed forward, variable-speed control, and the 30 ips speed control. For simplicity of operation the operator will merely throw a switch which will operate the equipment from high-speed record to the low-speed variable playback. Other features such as instantaneous start and stop, record interlock, push button controls, and adequate safeguards to prevent unintentional erase of the tape will be provided.

7. Timewise, the equipment program appears to be moving according to schedule. The prototype is expected to be completed by 1 May and [REDACTED] indicated that at that time a visit would be made to the contractor's plant to observe the equipment in operation. It is felt that any minor changes required in the equipment could be incorporated before it is sent to [REDACTED] for actual testing. [REDACTED] indicated that the 45 days required for the fabrication of the 14 "production run" units was certainly an adequate length of time. He was extremely confident that the "production run" could be delivered to the Agency within this period of time.

8. Since this was [REDACTED] first visit to the [REDACTED] plant, [REDACTED] indicated that he would like to show us their facilities. As a result, about an hour tour was conducted by [REDACTED]. The [REDACTED] plant itself is approximately 2 to 3 years old and is located in suburban Tulsa. The company employs approximately 450 people and has approximately 100,000 square feet of floor space. Included in the plant are adequate machine shop facilities, fabrication facilities, engineering office space, etc. It was learned from [REDACTED] that [REDACTED] had bought out [REDACTED] and moved the [REDACTED] facilities to Tulsa. At that time [REDACTED] was in certain financial difficulties. [REDACTED] has since brought the [REDACTED] to the point where it is now self-supporting. During the tour, it was noted that [REDACTED] is primarily aiming its equipment toward the home stereo market.

9. The [REDACTED] end of the business is primarily concerned with the design, fabrication, and sale of precision measuring

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and test equipment. They are concerned with light sensitive oscillographs, galvanometers, etc. [REDACTED] was asked whether the [REDACTED] Division would consider any R&D programs for miniature tape recording devices. He indicated that they most certainly would be interested and about the only thing that might stop them from bidding upon any of our specifications would be the fact that they could not meet the required delivery dates. This would be due primarily to previous commitments they might have. Although no small tape recording devices were seen or shown to Messrs. [REDACTED] it might be advantageous to see what [REDACTED] might propose on some of our equipment specifications. [REDACTED] who is handling the modification of the tape recorder under this contract appears to be quite competent, and if he is representative of the engineering level at [REDACTED], the company would certainly seem to be capable of providing unique solutions to some of our tape recording problems.

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